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THE HYGIENE

OF

THE TURKISH ARMY;

BY

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THE HYGIENE OF THE TURKISH ARMY.

I.—THE SOLDIER.

CLAD in a dress which is not adapted to his habits, and equipped with somewhat cumbrous accoutrements, the aspect of the Turkish soldier is not, at the first glance, very satisfactory. While the dark regulation blue of his uniform retains its pristine tint, and the bright red of his fez is yet undimmed, and while his weapons still glitter with the polish of the manufactory, he has some semblance of that neatness which the occidental looks for in the well-trained soldier. But when, after a brief period, the short-cut tunic has shrunk out of all proportion, and has become flecked with brown and greyish-white stains, as of mildew, the original blue having early faded; when the coarse strands of the cloth are visible at many a roughly used point; when the fez has become pale or clouded, and the tassel, almost devoid of colour, hangs dishevelled beneath the dimmed brass,* when the ungainly slippers look still more ungainly from engrained dirt, which is never removed by the

* The soldiers of the Turkish army, and the sailors of the navy, have a small circular plate of polished brass fixed upon the summit of the fez. This plate is a distinctive mark of the Imperial military and naval service.

brush, or hidden by blacking ; when the weapons and accoutrements bear glaring marks of imperfect cleansing ; and when, together with much that is untidy, there is an absence of all smartness, then the Turkish soldier seems but a caricature of western military fashions.

This, indeed, was the general aspect of the Turkish soldier during the war of 1854-6 ; but notwithstanding that his slovenly and unsoldier-like bearing might rout every preconceived notion of military requirements, yet the most superficial observer could not fail to notice the matured physical powers of the man, and the ease with which he moved under a heavy pack. When the eye had become accustomed to the short-comings of dress and bearing, it soon recognised the admirable stuff of which the Turkish soldier was made, and his fitness for a military life.

Temperate in his habits, the duties of the barrack and of the camp deprive the Turkish soldier of no luxuries that he cares for ; accustomed to a diet admirably adapted, from its simplicity, for the field, and having few wants, he can struggle with the vicissitudes and hardships of a harassing campaign, perhaps better, and with less suffering, than the soldiers of any other nation ; and, as he has few vices, the restraint of military discipline does not fret him. He is not, as a rule, cleanly in his person, unless he can have access to a bath, which he will use as often as his means will permit ; or unless he is under the command of a smart officer. The soldier may certainly perform with scru-

pulous regularity the daily ablutions prescribed by his religion; but these ablutions, as ordinarily practised, are not such as to ensure cleanliness. He is indolent, and ignorant of most things beyond the immediate sphere of his military and religious duties. Steady in the former, he is regular in the latter; and, during a campaign, he may be seen, at the appointed hours, within the camp, upon its verge, or at the road-side, performing the accustomed prostrations, and repeating the necessary prayers; and at sun-set, whole battalions and regiments, headed by their priests, will draw up in front of their encampments, and, with all the regularity and order of a parade, fulfil their devotions.

The most marked characteristics of the Turkish soldier, during the war of 1854-6, were maturity of age and of physical development; and in these respects, so far as could be judged by a general examination, in the absence of all numerical data, he contrasted most favourably with the soldiers of the other sections of the allied forces, and particularly with the British and French soldiers.

The influence of matured physical powers in maintaining the efficiency of an army in the field, particularly during a harassing campaign, is an important question of military hygiene. The experience of our own army in the Crimea would seem to show most conclusively that immaturity of age, and incomplete physical development of a considerable portion of the men, were among the most potent predisposing causes of disease; and, also, that they were influential in fos-

tering a high degree of mortality. That the matured physical powers of a great proportion of the Turkish soldiers had no inconsiderable effect in maintaining the efficiency of the Turkish forces during the Crimean campaign, notwithstanding the protracted sufferings entailed by a wretched *quasi* Commissariat,* and the bad hygienic condition of crowded and long occupied camps, may be fairly assumed.

Dr. Lyons, in his *Report on the Pathology of the Diseases of the Army in the East*, makes the following instructive remarks on extreme youth and incomplete physical development as a predisposing cause of disease amongst the troops:—"In treating of the various predisposing causes of disease in operation amongst Her Majesty's forces in the East, there is one which may be classed amongst physiological influences, and which demands most earnest consideration at your lordship's hands. I allude to the extreme youth, incomplete physical development, and general immaturity of a very considerable proportion of the strength of several regiments; constituting, as I have reason to believe, in the total of the army, a number sufficiently great to render the question one of vital moment and of even national interest, as largely affecting what may be called the physiological economy of the army. Amongst even well-matured constitutions, the hardships and fatigues, trials, privations, and exposure of campaigns, such as those of the past years in the Crimea, must

* The Turkish army has no regular commissariat.

almost of necessity prove largely productive of disease, and induce much mortality. But on the undeveloped frames, and the unripe strength of the ill-seasoned recruit, such causes operated with two-fold energy, and with a more than doubly fatal effect. Not only does the power of resistance to morbid influences, and the consequent invasion of disease in such youths, seem inferior to that of the older soldier, but when attacked they succumb more readily under the effects of a fever or a flux. And even when such a disease does not prove immediately fatal, the convalescence of the young is generally slow, constantly attended by a disposition to relapse, or to the development of those secondary enteric lesions, the almost unfailing result of such fevers as those which prevailed amongst the troops of the East.

* * * The results of surgical pathology corroborate, to a large extent, the observations just made, which are chiefly based on considerations arising out of the behaviours of the immature constitution under the effects of disease. As a general rule, true, at least, in a very large part of its usual acceptance, youth forms a favourable element in the calculation of chances of surgical cases. Amongst the troops in the Crimea, however, no such favourable anticipations could be indulged in on the score of youth. The constitution of the young, even independently of the presence of actual disease, seems much impressed by the influence of the various causes dwelt on; many succumbed almost immediately under the shock of injuries; and in the case of the graver surgical operations, no more advantageous re-

sults, but the contrary, appeared to be shown on the side of the young: in fact, youth was not to be counted on as a favourable element in determining a prognosis in such cases." (p. vii.)

The Turkish army is recruited by voluntary enlistment, and by a species of conscription among young men of twenty years of age, and upwards, or among those who are supposed to have reached that age. Every man pronounced to be in good health and of the proper age, is summoned to form part of the annual contingent, but only one member of each family is enrolled, and only sons are exempt. The conscription falls upon the lower orders, the rich escaping. The officers, as a rule, are obtained from the same class of society as the men, and, in consequence, they are extremely ignorant. It is estimated that the male population of Turkey in 1844 amounted to 19,533,124, of which 4,784,490 were of military age (twenty to forty years); a levy of one man in ten of the military age would give a force of 478,449 men. (*Registrar General's Sixteenth Annual Report*, p. 122.)

II.—THE DRESS.

The uniform of the Turkish soldier is made of the coarsest materials, and its colour, dark blue, is fleeting. Moreover, the regulation tunic has a wretched and uncomfortable aspect, and straight-cut trowsers are unsuited to habits of kneeling and sitting cross-legged. The soldier is not ill clad, so far as amount of clothing

is concerned, and his dress is in several respects well fitted to the climate of the different parts of the Turkish empire. The complete suit of strong cotton which every man wears next the skin, is calculated to protect the surface from those slight, but sudden, alterations of temperature which not unfrequently accompany exposure to the evening breezes, or the light airs of early morning, during the hotter seasons of the year, and which are apt to induce serious functional and other disorders. On the other hand, during the colder seasons, the under-clothing, which is then made of cotton of a closer and heavier texture, contributes in an important manner to the maintenance of the warmth of the body.

In the summer, loose white trousers are worn, and, according to the regulations of the service, a white jacket should be issued to each man; and when, at this season (as in the case of the Egyptian troops), the men are clad altogether in white, the effect is most pleasing, particularly on parade. The loose white dress sets off both the men and the accoutrements, and the bright red of the fez, and its polished brass plate, give a brilliant finish.

The fez affords slight protection against rain and the sun, and it does not give any shade or defence to the eyes; yet, obnoxious as this head-dress may be to western notions, no very apparent evils arise from its use—at least, trustworthy evidence of its harmfulness is wanting. The hood, which is attached to every soldier's over-coat, is an additional protection to the

head from wet ; the existence of any peculiar tendency to evil effects arising from undue action of the sun's rays upon the head, and consequent upon the use of the fez, is doubtful ; and although some medical men consider that the fez induces an unusual amount of ophthalmic affections amongst the Turkish troops, yet these affections are so frequently, if not generally, associated with filthy habits, that the correctness of the conclusion may be doubted.

Early in the spring of 1855, when attached to the Turkish forces at Eupatoria, I noticed that a large number of the soldiers were affected with *ophthalmia tarsi*. The disease was almost invariably connected with great personal filth, and it was most commonly found among those men who were crowded in the filthy hovels within the town, particularly in the deserted shops, which had never been fitted up as dwelling-houses. In these wretched quarters the men sought warmth from close crowding and incandescent charcoal, and they rested upon floors of hardened mud. At the same time the food of the men was insufficient and of bad quality, and the water chiefly used was brackish.

The infantry are shod with loose strong slippers ; the cavalry with boots which extend to the middle of the leg ; and both classes of soldiers wear thick woollen stockings.

The soldier loves to have his legs warmly clad, and he often has recourse to sundry effective but ungainly expedients, in addition to the means provided for him,

to attain this end. The peasant recruit, accustomed to enwrap his legs in some thick material, the folds of which are kept in their place by ligatures of twine, carries this habit into the camp, and the suburban or town-bred recruit adopts the more sightly "legging" of eastern costume. It is not uncommon, during a march, to see the soldier with his trousers and drawers rolled up to the knee, exposing legs so swathed as to be almost shapeless.

The slipper is, perhaps, the most objectionable portion of the soldier's dress. An abomination in wet weather, and a serious impediment in mud, it is only when the ground is hard and dry that this form of covering for the feet is at all supportable. Certainly from habit the Turk shuffles along exceedingly well in the slipper, and it is endeared to him by the usages of his religion; but thus shod the soldier can rarely, if ever, acquire that smartness of action, and precision of step, which is requisite to the perfection of a western drill. In the best-trained regiments, shortcomings from this source may be discerned, and no cause contributes more to that want of a soldier-like bearing, which is so conspicuous among the Turkish troops.

The slipper is an imperfect protection against wet and damp, and its use is doubtless a common source of disease, although habit, and the custom which is usually practised by the Turkish soldier, particularly in inclement weather, of clothing the legs warmly, may diminish the chances of mischief.

Each soldier is provided with a long large over-

coat, to which is attached a capacious hood. The over-coat, which is of sufficient length to extend below the middle of the leg, is made of coarse, heavy cloth, and it shields the body tolerably well from both wind and rain.

The Turk has a habit which is very instructive. When in the morning or the evening, during the hotter seasons, he reclines in the open air, or before the unclosed window, he will generally have cast loosely around him, if he be of the wealthier class, a large coat lined with fur, or if he be of the poorer class, a heavy sheep-skin coat. Thus, without incommoding himself, he is safely protected from the evils which the cooler hours of the day might bring to him, and he resists more effectually the insidious poison which is often borne upon the wind. For in most parts of the Turkish empire, the wind, sweeping over imperfectly cultivated or marshy tracts of land, is apt to be laden with pernicious malaria, which finds a lodgment most readily during the hours when the system is relaxed.

Another habit customary with the Turk when enjoying himself in the open air, and worthy of note, is the use of the carpet spread upon the ground. The carpet not only makes a cleanly seat, but it also protects from whatever moisture there may be at the surface of the earth.

The Turkish soldier practises both these habits, and he may be seen, in the intervals of duty, squatted upon his carpet, and with his large, hooded great-coat

thrown loosely over his shoulders, enjoying the cooling breeze, and inhaling the grateful fume of tobacco.

The issue of clothing to each soldier is as follows:— One uniform coat, one pair of uniform trousers, two pairs of white trousers, a light jacket for summer, two winter shirts, two summer shirts, two pairs of winter drawers, two pairs of summer drawers, two pairs of stockings, and one fez, every year; one pair of slippers every three months; and a great-coat every three years. A carpet, measuring about six and a half feet in length and four feet in breadth, is also issued to each man yearly.

The weight of the knapsack and accoutrements of the infantry soldier, in marching order, and exclusive of the weapons, is full twenty *okes* (fifty-five pounds).

III.—THE FOOD.

If there be one subject in connection with military hygiene, which is more important than another, it is that of food; for the efficiency of an army is, perhaps, more dependent upon the character of its food than upon any other thing.

The food of the Turkish soldier is in many respects singularly well adapted to a military life. At first the coarse brown bread, the dark hard biscuit, the lean ill-fed meat, the lard-like fat, and the filthy rice, which form the bulk of the ration, have a repulsive aspect to the occidental, and they seem ill calculated for the proper nutrition of the soldier; but the food is such as

he has been habituated to from childhood ; the bread, when made with ordinary care, is sweet and wholesome ; a substitute for the scanty fat of the meat is furnished by the *yagh*—the sheep's tail fat—of the rations ; and dirt is a remediable and the only evil of the rice.

The daily ration scale of the Turkish soldier is as follows:—*Bread*, three hundred drachms (*i. e.* about thirty-four ounces : eight drachms and three quarters being equal to one ounce avoirdupois) ; *meat*, ninety-two drachms (ten ounces and a half), except on two days of the week, when no meat is issued ; *rice*, twenty-five drachms (two ounces and three quarters), which are used in the preparation of soup ; but on the days when the soldier receives no meat, ninety-two drachms (ten ounces and a half) of rice are issued for the preparation of *pillaff* ; *yagh**—sheep's tail fat—sixteen drachms (one ounce and three quarters) ; *olive oil*, twenty-five drachms (two ounces and three quarters), used for light and for cleaning arms, as well as for food ; *salt*, about four drachms (half an ounce) ; *vegetables* (onions, *nohud* (chick-pea?), haricot beans, etc.) a variable quantity.

The issue of rations to the Turkish soldiers is upon the same scale, and includes all the before-mentioned articles of food, in peace and in war : and in this respect the regulations of the Turkish army differ ma-

* “*Yagh*” is a general term for butter, grease, tallow, oil, fat, &c. ; but the “*yagh*” of the soldier's ration is generally prepared sheep's tail fat.

terially from those of our own army. In the British army, under ordinary circumstances, and in non-tropical climates, bread, or biscuit, and meat, are alone furnished to the men, the remaining articles of food being purchased by the soldiers themselves, subject simply to the control arising from the organisation of the messes.

The regulation governing the issue of rations in the Turkish army, although originating, in all probability, from another and far different source, is worthy of consideration in reference to hygiene.

It is a questionable policy which does not at all times provide for the soldier the full amount of those articles of diet which are requisite for the preservation of health; for in a matter of such importance it ought not to be left to the soldier, as in our own army, to eke out somewhat scanty rations from a scantier pay, as, notwithstanding that messing may obviate any serious mischief from this source, and that the men may prefer to purchase food for themselves (probably because they can thus obtain a more varied diet), yet a liberal ration scale, such as is adopted in our navy, would give the soldier a better regulated and sufficiently varied diet, and probably be more conducive to health.

Again, without the adoption of such a ration scale it would, perhaps, be impracticable to teach the soldier efficiently that knowledge of the best methods of preparing food, the want of which, in our own army, is not only a glaring evil, but it is also one of the gravest sources of disease during a campaign.

Moreover, unless a complete and constant ration

scale be adopted, it is improbable that a class of officers can be trained who will be capable of contending properly with the difficulties of providing an army in the field with food. A knowledge of the character and value of food, and of the readiest substitutes for important articles of diet, cannot be obtained without a specific training; and it is from the want of this training that our Commissariat has been generally so lamentably inefficient at the commencement of a campaign. The sad illustrations in confirmation of this statement, which may be derived from the history of the Crimean war, will be still fresh in the memory.

The ration of the Turkish soldier is very liberal. He wants for none of the essentials of diet, and the proportion of meat, although small, is quite consistent with his habits and taste, meat being held in much less regard by the oriental than by the occidental. The ration, irrespective of vegetables, contains somewhat more than forty-nine ounces of solid aliment. This amount of food is more than the soldier requires under ordinary circumstances, and it is amply sufficient to satisfy his wants during a campaign.

Probably the soldier of no other nation in Europe is so plentifully rationed as the Turkish soldier, and the contrast with the ration of our own soldiers is great. The daily ration of the British soldier, in non-tropical climates, is one pound of bread, or three-quarters of a pound of biscuit, and one pound of fresh or salt beef, or pork. In tropical climates the ration is the same, "except that on two days of the week the

issue of salt pork is reduced to twelve ounces, and the soldier receives in lieu of the remainder a daily issue of five-sevenths of an ounce of cocoa, one ounce and two-sevenths of sugar, and a quarter of a pound of rice, or half a pound of peas." (*Statistical Reports on the Sickness, Mortality, and Invaliding among the Troops in the United Kingdom, etc.*, 1853, p. 118.) Under extraordinary circumstances the amount of the ration is increased; and during the Crimean war the soldier received daily one pound and a half of bread, or one pound of biscuit, one pound of fresh or salt meat, two ounces of rice, and a ration of sugar, and coffee, or tea. The usual daily ration of spirit, half a gill, was also increased to one gill. Thus the weight of the British soldier's ration, exclusive of vegetables, varies, under ordinary circumstances, from thirty-two to thirty-six ounces, and under extraordinary circumstances from thirty-four to forty-two ounces; in the first instance the amount of solid food being from thirteen to seventeen ounces less than in the ration of the Turkish soldier; in the second instance, from seven to fifteen ounces less. The common use of sugar, coffee, or tea, and spirits by the British soldier is not, however, to be lost sight of; and a regulation exists in our army by which the different messes may claim an extra amount of bread or biscuit if it be required. Moreover, the food of the British soldier is of a much better quality than that of the Turkish soldier.

The daily ration of the British sailor may be regarded as a standard of the amount of food requisite

to maintain the body in full health. This ration contains from forty to forty-eight ounces of solid nutriment, inclusive of eight ounces of vegetables.

The Turkish soldier eats two meals daily, the first meal being taken two hours after sunrise, the second one hour before sunset, and in the interval the soldier rarely takes any food. The evening meal is the most substantial meal of the day. The ration of the Turkish soldier is amply sufficient for two excellent meals daily, and, if requisite, for a third and slighter meal.

It is difficult to dogmatise upon the times and the method in which food should be taken, as so much depends upon peculiarities of duty and of habit ; but it is questionable whether a more fitting plan could be adopted than that which is used by the Turkish soldier, whether the subject be considered physiologically or in reference to the duties of a military life. The division of the ration into two full and substantial meals, and the consumption of these meals at the commencement and termination of the day, fulfil the most important physiological requirements for the sustenance of the body ; for by such an arrangement the food is very equally divided over the whole day, and the interval which elapses between the meals admits of digestion and assimilation being fully and properly effected. Moreover, a solid and substantial meal at the commencement of the day is the best preparation for military duty, particularly in the field ; and a still more substantial meal at the termination of the day is the method best adapted for recruiting the

exhausted physical powers, and for preparing the soldier to undergo the fatigue of night duty.

The importance of the latter consideration during a campaign cannot well be exaggerated ; and the experience of the Crimean war showed that the want of an arrangement by which the soldiers of our army could have a substantial evening meal, was equivalent to an actual deprivation of food.

The British soldier takes three meals daily. The morning and evening meals, consisting mainly of farinaceous substances with liquids, are comparatively slight ; the noon meal is the principal meal of the day.

This arrangement, so long as the soldier purchases the greater portion of the articles of food which he consumes, and is not confined to a limited quantity, may act well enough ; but when he is dependent upon his ration alone, as during a campaign, the case is different. For the arrangement of the meals is incompatible with a true economy of the ration, the more nutritious portions of the food not being sufficiently distributed throughout the different meals ; the morning and evening meals are not substantial enough for the physical requirements of a campaign ; and the amount of the ration, so long as the system of cooking commonly pursued in the army is continued, is not sufficient to furnish the soldier with three ample meals daily. Hence it was found necessary to augment the ration scale of our army during the Crimean war.

It would be well if our soldiers were taught so to arrange their food, that the morning and evening meals

should be the most substantial meals of the day. Such an arrangement, while it would enable the soldier to bear up better against the physical hardships of a campaign, would also contribute to the maintenance of a higher degree of health in the field, and many sufferings would in consequence be avoided.

The morning meal of the Turkish soldier consists of bread, and of a scup composed of rice and *yagh* seasoned with salt ; the evening meal consists of bread, and of a stew formed of meat, rice, *yagh*, and vegetables, when the latter are issued. Twice in the week, when no meat is issued, *pillaff* forms the principal portion of the evening meal. Pillaff is rice cooked with fat, or butter. The rice having been boiled in water until softened, the superfluous fluid is poured off, and the grains are fully distended by exposure to a gentle heat. Then boiling fat, or butter, is poured over the rice, and mixed with it. The proportion of fat or butter in a pillaff should be sufficient to sheath each particle of rice ; but the soldier and the lower order of Turks generally prefer the fatty matter in excess.

Well-made pillaff is a satisfactory and substantial dish ; and when richly flavoured soup is substituted for water as the agent for softening and distending the rice, the dish is most appetising. Pillaff, moreover, in the absence, or with a scanty supply, of meat, is not a bad campaigning dish. Its bulkiness is well fitted to satisfy the cravings of the appetite ; the simplicity of its constitution is such that it may be readily prepared under most circumstances ; and the materials of which it is composed are easy of carriage.

The bread used in the Turkish army is, when well made, sweet and palatable, although coarse, and, when practicable, it is issued freshly baked to the men every day. The ration-biscuit is exceedingly hard, but it is made of a finer and better flour than the bread. Before eating the biscuit, it is customary to break it into small pieces, and soften them by soaking in water, subsequently placing the fragments between a fold of damp cloth, or linen, and allowing them to swell.

When bread cannot be obtained, a quarter of an oke (eight ounces and a half) of flour is sometimes issued in lieu of biscuit. The men prefer the flour to the biscuit, as they can make a form of bread which is more grateful to the taste than biscuit. The usual method of preparing flour for food is very primitive, but it is suited for campaigning under circumstances when a supply of fresh bread cannot be obtained. The flower is mixed with water so as to form a paste of slight consistency. A portion of the paste is then spread out thinly upon an iron plate, and baked over embers. The cake thus made is termed *ufka*: its taste is not unpleasant, and its appearance is similar to the thin oaten-cake of our northern counties, but the colour is darker.*

* Froissart, writing of the manner in which the Scots carried on war in the time of Edward III, states that, "Under the flaps of his saddle, each man carries a broad plate of metal; behind the saddle, a little bag of oatmeal: when they have eaten too much of the sodden flesh, and their stomach appears weak and empty, they place this plate over the fire, mix with water their oatmeal, and when the plate is heated, they put a little of the paste upon it, and make a thin cake like a cracknel or biscuit, which they eat to warm their stomachs." (Vol. i, chap. xvii.)

The Turkish soldier usually stews his meat, but occasionally he cooks it in a different fashion. One evening in June 1855, when the troops to which I was attached had bivouacked on the eastern bank of the Tchernaya, two men, from a battalion of Turkish rifles that had halted nigh at hand, approached a fire near to the spot where my tent was pitched, and prepared their evening meal. Each man had cut a small branch from a neighbouring bush, and this branch was first peeled, and cut to a point at one extremity. One of the men then drew from his havresack a portion of the intestines, and the other man produced a piece of the flesh, of a newly killed sheep. The soldier who possessed the intestine, wrapped it, fold upon fold, round the branch he held in his hand, transfixing with the pointed extremity the last fold ; and the other soldier having cut his meat into small pieces, pierced them with the sharp end of his branch, and fixed them one after the other upon it. A little salt was then sprinkled over the meat thus spitted, and one of the men even added some pepper, which, after much fumbling, he produced from a small paper parcel. The spits were then held, in the hand, over the fire until the meat was cooked, when the intestine was disengaged mouthful by mouthful, and the fragments of mutton were drawn one by one off the spit ; and, with the addition of a large allowance of bread, each man ate his evening meal with avidity, and terminated it with copious draughts of water.

When Agamemnon feasted the “elder chiefs of

all the Greeks, having pierced the entrails with spits, they held them over the fire. But then after the thighs were roasted, and they had tasted the entrails, they cut the rest of them into small pieces, and fixed them on spits, and roasted them skilfully, and drew them all off the spits." (*Iliad*, b. ii.) And when Nestor feasted Telemachus, and "the thighs were burnt and they had tasted the entrails, they cut the other parts into bits and fixed them on the spits, and roasted them, holding in their hands the sharp spits:" *Odyssey*, b. iii.)

Salted meat was not used in the Turkish army previous to the last war, when pickled mutton was from time to time issued to the soldiers. This mutton was exceedingly tough, and long stewing was required to soften it. Beef cooked in its own fat, with the addition of a little water, and kept in jars, was also occasionally issued. This form of preserved meat is termed *kavourma*, and it is a better and more palatable article of food than pickled mutton.

The cooking utensils used by the Turkish soldier consist of a circular thin iron plate, and a broad, shallow iron vessel, which is tinned within. One of each of these utensils is issued to every ten men.

In the preparation of a limited quantity of food, such a system of cooking should be adopted as will economise the food most, secure the whole of its nutritive properties, and adapt it best for the action of the digestive organs. These requisites are fully attained by the method of cooking commonly used by the

Turkish soldier ; and the system of stewing which he ordinarily pursues in the preparation of his food is that by which such requisites can be most readily fulfilled. The stew-pan wastes nothing, loses nothing, and its capacity is illimitable ; moreover, no other cooking vessel can be so easily manipulated.

The Turkish soldier, inasmuch as the stew-pan is, as it were, his national cooking vessel, has an advantage over the English soldier. The English soldier is habituated mainly to roast or boiled joints, and to the preparation of vegetables in a simple and separate form, and no method of cooking is less calculated to economise his ration, or is more unfitted for the field. Indeed, if the ration of each soldier were issued singly, it would prove, as a rule, insufficient for the ordinary consumption of the man, so long as the method of cooking usually adopted in the army is persisted in, and it is only by the system of messing that such a shortcoming is avoided.

The evil results of a vicious system of cooking were very palpable among our soldiers during the last war. Their food was too commonly presented to the stomach in a form ill adapted for digestion (considerable discomfort and suffering, if not actual disease, arising from this source alone), and the rations were partly wasted. The hard masses of badly boiled, roasted, or grilled meat, and of worse cooked vegetables, were most pernicious while the soldiers were exposed to the influence of those powerful miasmatic emanations which were peculiarly rife in the camp, and which

predisposed in an especial manner to intestinal affections.* It was a common observation among the healthiest soldiers, that boiled vegetables almost invariably passed through the intestines and appeared in the ejections nearly unaltered; and upon this ground alone the medical officers of some divisions, during the summer of 1855, advised the discontinuance of the ration of potatoes, lest the imperfectly digested vegetable, in its passage through the bowels, should excite diarrhœa or dysentery. Had the vegetable been cooked

* "Of the various causes operating in the production of disease amongst the troops in camp, the greater part tended undoubtedly to the development of morbid action in one part of the system more especially, and this almost to the exclusion of affections in other organs, at least in a primary form. The abdominal viscera were those in which disease was most commonly manifested. Physical causes from without, and irritation established within, in some measure, at least, connected with peculiarities of life and diet, led to a predominant tendency to gastro-enteric derangements, and the consequent development of the diseases known as fluxes, in their various forms. It may, indeed, be said, that the main features of the pathology of disease, as presented in the army of the East, were embraced in the two classes of the fevers and the fluxes; and of the latter, no inconsiderable portion owed their origin to the former. Ample proofs will be found, in the various following sections of this Report, of the extraordinary predominance of abdominal lesions. To such an extent did they prevail, that I believe I shall be warranted in stating, that in no case submitted to examination by me or my assistant has a perfectly normal state of the digestive viscera been found to exist; while a marked absence of lesions in other parts was, in those who died in the early periods of disease or injury, the general rule..... In no instance, in which a *post-mortem* examination has been made by us, have the abdominal organs been found entirely free from disease. And these observations will hold good, not only in the case of those dying from acute or chronic disease, in which symptoms referrible to the abdomen were present, in a more or less marked degree, but also to all those cases in which death was the result of the shock of great mechanical injuries, or followed at an earlier period after the greater surgical operations." (Dr. LYONS' *Report on the Pathology of the Diseases of the Army in the East*, pp. xii, and 11.)

in such a fashion that it would have been reduced to a pulp, probably complete digestion might have been insured, and the nutritive effects of this important article of diet might have been fully secured, while the evils resulting from the presence of crude vegetable matter in the digestive track would have been avoided. A portion of the rations was lost, because the method of cooking necessitated a certain amount of waste, and the ration of one valuable article of food could not generally be made use of in a manner satisfactory to the palate. In several divisions the ration of rice was rarely drawn by the men, for they were not acquainted with a method of cooking which would give to it a grateful savour; and this valuable aid to the contents of the stew-pan (in which, while adding to the bulk of the food, the rice receives the flavour of the more sapid contents) was lost. Thanks to M. Soyer, some portions of the army, before the termination of the war, were taught better and more economical habits of preparing their food; but, owing to apathy on the part of the officers, and to a degree of obstinacy on the part of the soldiers, the good results of M. Soyer's instructions were but partial. Indeed, the dishes habitual to the soldier were not to be done away with during a brief campaign, and the field is not the proper place for tuition. Nothing is more essential to the maintenance of the soldier's health than a proper system of cooking; nothing is more important than a system which will enable him to husband his rations in the field, and add to them by any article of food which

may chance to come to hand. The stew-pan is the only means by which such an end can be readily attained; but the use of the stew-pan and its capabilities, and a taste for the dishes which can be prepared in it, must be taught systematically to the soldier in times of peace. The soldier should be drilled in the mysteries of the stew-pan as well as in his manual exercise.

Water is the chief drink of the Turkish soldier, and he consumes large quantities of it; but, not unfrequently, he shows considerable indifference to its quality. In the field, his inattention to the precautions necessary for the protection of the springs from which he drew water, often led to their pollution. The Turkish hospital, at Balaklava, was supplied with water from a spring about two hundred yards distant from the hospital. At first, the hospital attendants and guard drew water, along with the British soldiers stationed in the vicinity, from a spring at a greater distance from the hospital, but more easy of access. It was discovered, however, that the Turkish soldiers were in the habit of washing their cooking utensils, and even cleansing their foul linen, in the water at the spring-head, whereupon a British sentry was placed near the spring, and the Turkish soldiers were forbidden to draw water from it. They had recourse then to a well from which a copious supply of excellent water could at all times be obtained, and which was nearer to the hospital. No control being exercised over the Turkish soldiers at this well, the water be-

came in a short time irretrievably polluted. The men washed their linen, and cast out water, unnecessarily, upon the brink of the well, and the ground in the immediate vicinity was converted into a deep slush, which oozed through the interstices of the stone-work, and trickled into the water. No attempt was made to remedy the evil, and at last the water became offensive even to the smell. Yet this was the only source from which the supply of water for the hospital was drawn for several months, notwithstanding that two or three small unused springs existed on the plateau near the hospital. Once, indeed, when the water had become highly offensive, an attempt was made to discover a spring which had existed very near the hospital, but which had been lost in consequence of the formation of a burial-ground, belonging to certain of the British forces on the heights. An exploration was commenced near the lower border of the burial-ground; but, fortunately, the spring was not discovered, for I subsequently ascertained that the water, diverted from its original course, permeated the graves, and traversed the burial-ground near its centre.

Even the springs contiguous to the head-quarters encampment, and immediately under the eye of the Commander-in-chief, were ruined by the filthy habits of the soldiers, and it was necessary for the men to procure water from wells half-a-mile distant from the tents. The banks of a copious spring, in a hollow on the verge of the encampment, was used as a latrine, and a depository for carrion.

Spirit-drinking is so rare a vice among the Turkish soldiers, as scarcely to merit a passing notice; but the officers are not so free from the pernicious habit, and with them it assumes its worst form, the spirit (of whatever kind it may be) being drunk pure, and often in large quantities.

Coffee and tobacco are the two great luxuries of the soldier, but he has to provide them from his own resources. The coffee is used after the fashion of a cordial. It is prepared, generally from the freshly-ground and recently-roasted berry, as a strong decoction, of which the dregs form one-third or one-half of the whole bulk. A quantity of this decoction, equal to about one ounce (without either sugar or milk), is commonly taken at one time, and the dregs are swallowed along with the liquid. This is the usual mode of drinking coffee in Turkey.* Tobacco is used according to the fancy of the individual; but the soldier often passes long intervals without it in the field, and he suffers much less discomfort from the deprivation than would be ordinarily supposed.

The Turkish soldier has great tact in economising his fuel—a tact arising from habit, wood and charcoal being almost the only kinds of fuel used in the

* The introduction to Dr. Wagtail's disquisition on the verb *drink* may be fitly applied to the Turkish method of taking coffee. "The verb *drink*," as the learned doctor affirmed, "was improperly applied to the taking of coffee, inasmuch as people do not drink, but sip, or sipple, that liquor; . . . the genuine meaning of drinking is to quench one's thirst."—(*Roderick Random*, chap. xlv.)

Turkish empire. The Turk rarely uses a fierce heat in cooking, and, over a handful of embers, he will perfect excellent dishes. The process of cooking with a gentle heat may require more time, but not so much as to militate against the advantages to be derived from the better method of preparing the food. A hole, about six inches in length, and five in breadth, formed like a horse-shoe, and dug into the side of a bank, or an enclosure of similar form and size, built up with clay and stones, is the usual fire-place of the Turkish soldier in the field, and it answers every purpose of economy and usefulness. The daily issue of fuel to the soldier is three hundred drachms (about thirty-four ounces) of wood, and the same amount of charcoal. This is a much more liberal ration than that which is allowed to the British soldier. The daily ration of fuel for each man in our own army is twenty-four ounces of wood, and twelve ounces of coal.

IV.—THE CAMP.

A Turkish camp has commonly a very pleasing aspect, the Turkish soldiers being well versed in those arts which give order and neatness to an encampment. The tents are pitched well and with great regularity; they are not crowded together, nor fixed too far apart, and generally the ground in front and in the intervals of the lines of tents is carefully cleaned and smoothed; or if it be apt to retain much moisture, it is neatly paved with stones, forming a capital stand for the

arms, and enabling the men, in wet weather, to enter their tents without dragging along with them heavy clods of tenacious mud. The latrines are placed sufficiently in the rear, and they are usually made with great care. During the Crimean war no other section of the allied forces equalled the Turkish troops in the construction of latrines. A deep hole is dug, and this is in great measure covered in, a small aperture only being left, above which is pitched a latrine tent, or, if brushwood be at hand, a hut is often erected. Thus the eye is not offended by those huge and filthy holes which were in common use among the soldiers of the English, French, and Sardinian armies, and the stench from the latrines is materially diminished.

But order and neatness are not equivalent to a good hygienic condition of a camp; and while, on the one hand, a well-pitched Turkish encampment might be held up as a model to other armies, on the other hand the Turkish soldier has certain pestilent habits which render an encampment as offensive as can well be imagined. He scatters offal about most carelessly, and he has a singular aversion to the use of latrines, notwithstanding his care in their erection, and, if practicable, he will almost invariably retire to the verge of the encampment; hence it happens that its immediate vicinity, as the nostrils and the eyes too readily detect, is commonly defiled in the most disgusting manner.

In the fine seasons of the year, and when near wood, the Turkish soldier will, with great ingenuity,

embellish and add to the comforts of an encampment by erecting bowers and shades of foliage, beneath which he delights to recline during the warmer hours of the day, in preference to remaining within the hot tent. A Turkish encampment, under such circumstances, is a singularly attractive spectacle.

After the advance upon the Tchernaya, in May 1855, the Turkish force took up a position on the low ridge of hills which traverses the plain of Balaklava. The white tents were pitched with great regularity upon the eastern face of the ridge, and upon the summits of the hills; and in front of the different groups of tents were erected bowers and shades of the most varied character, and formed of branches of shrubs and trees obtained from the wooded hills at the southern extremity of the plain. There were large sheds, open on every side, and elaborately-constructed bowers, and a multiplicity of small huts. Even the cooking places were hedged in with foliage, or hutted over. The aspect of these constructions of rich green foliage was very beautiful; and even when the fresh colour began to fail, and the leaves became spotted with brown and yellow as they faded, the bowers and huts had still a most pleasing effect upon the eye.

The Turkish soldier, when on the march, shows also considerable ingenuity in erecting temporary shelters of boughs and foliage to protect himself from the heat of the sun by day, and from the wind or dew by night.

The tent used in the Turkish army is the ordinary bell-tent. It is formed of two layers of strong cotton; and, when properly pitched, it has within, at the base, a diameter of about fourteen feet. It is well made, and, upon the whole, it resists wet well.

The regulation number of men to each tent is ten, but the actual number is almost always in excess, and not unfrequently it is fifteen.

The Turkish soldier makes himself very comfortable within a tent. If he be encamped for any length of time upon one spot, or even if it be for a short period only, he will contrive to arrange his tent so that he may have in it the height of campaigning comfort. He displays excellent skill in the formation of a floor that presents few asperities to his feet as he walks upon it shoeless, or to his sides when he is laid down; he banks up the flaps well with earth, and trenches the tent round, so as to diminish the chances of wet or of wind intruding; and in rainy or cold weather, he will ingeniously build, of loose stones and mud, a small fire-place within his tent, so that he may conduct there the whole process of his cooking. He possesses also, in a high degree, the art of making his tent as little permeable to the weather as possible, by walling it round, or sinking it in the earth, during winter.

The Turkish soldier has, however, very imperfect notions of the benefits of pure air. He likes to bask in the sun and lounge in the open air in fine weather; but he cares little about the condition of the atmo-

sphere he breathes, and, it matters not how foul the air in his tent may be, it is rare to see him take measures to purify it.

A bell-tent, although probably a convenient tent for carriage and for pitching, is not capable of thorough and effective ventilation ; and this becomes a question of some moment, when a tent is pitched for a considerable length of time upon one spot. It is usual, and indeed necessary, to raise the flaps of a bell-tent to ventilate it ; but, if the tent be well banked, this is an awkward and most troublesome method ; moreover, it can only be had recourse to in fine weather, for in wet or windy weather it leads to too great exposure and discomfort.

The defective ventilation of tents, an evil which is dependent upon the necessity for making them as weather-proof as possible, and which is found, more or less, in tents of every form, is important, inasmuch as it exposes the occupants not only to the influence of an atmosphere highly polluted by the products of respiration, but it intensifies the action of emanations arising from decomposing animal and vegetable matter, the most general and powerful source of atmospheric pollution to which a camp is liable. In the crowded and confined tent the soldier suffers much from an atmosphere thus vitiated, particularly when at night he is sleeping upon the ground.

The double-poled, or Arab tent, which was used by several of the French regiments in the Crimea, seemed to be, hygienically considered, a much better

form of tent than the bell-tent. The former is larger and more commodious within, and its interior can, on either side, be thrown fully open to the air. It is doubtful, however, how far tents of this form admit of being so readily pitched and managed as the bell-tent, and whether they are so well calculated to stand rough weather.

Attempts have been made to obviate the defective ventilation of the bell-tent, by apertures placed at the summit, and variously guarded ; but this method of ventilation has not been so successful as to lead to its general adoption, and it is liable to some objection in stormy weather.

During the Crimean war, none of the soldiers of the allied forces appeared to get on so comfortably under canvass as the Turkish soldiers. The English, French, and Sardinian soldiers put up with the mode of life as a necessary evil of campaigning, and they made themselves as comfortable as practicable under the circumstances ; but the Turkish soldiers, although having their peculiar grievances, seemed to settle down more comfortably under canvass than the soldiers of the other forces, and to be actually more comfortable.

This probably arose from the domestic habits of the Turk being such that, in a tent-life, and in camp-life generally, as it affects him, there is not that great change in the mode of living that there is among the English, French, and Sardinian soldiers.

It is customary, among the class from which the soldiers and the bulk of the inferior officers of the

Turkish army is derived, for a whole family, though large, to occupy during the day, and also at night, one room only of a house, even if the house contains several rooms, and in that room to live, cook, and sleep. Moreover, carpets or thin cushions, placed upon the floor, constitute the sole necessary and the usual articles of furniture, and serve for seats by day and beds by night. The cooking apparatus is equally simple, two or three metal stew-pans and a frying-pan serving for a family ; and the articles of food differ in no respect from those issued to the army. Hence it happens that, as a soldier, the Turk finds little in the crowded tent that is at variance with his habits ; he has in the carpet which is issued to him a full allowance of household furniture ; in every mess there is an amount of cooking utensils almost equal to, and in no way differing from, what he has been accustomed to in his own dwelling ; the food which he receives as rations is in character and quality such as he has always been used to, and he can cook it in those fashions to which he has been habituated, and which he prefers most.

That this comparatively slight degree of change between the habits and method of living in ordinary life and that of the soldier's life, has no small influence in contributing to the efficiency of the Turkish soldier in the field, there can be little doubt.

The hygienic condition of the Turkish camp before Sebastopol was not good ; indeed, except in the British camp, a neglect of measures for the purifica-

tion of the vicinity of the different groups of tents was too commonly apparent in the allied camps generally.

The cleanliness of a camp is a subject of peculiar importance, and the methods of attaining cleanliness merit more attention than they have yet received on the part of military officers. Cleanliness, so far as the neat aspect of a camp is concerned, is highly gratifying to the eye ; but this may be, and indeed often is, attained, and yet some of the worst sources of atmospheric pollution, from a misapprehension of their effects, are allowed to remain.

The continued inhalation of an atmosphere tainted by decomposing organic matter, such as is usually rife in a camp, is one of the most powerful predisposing causes of those terrible epidemics which ravage armies. It insiduously deteriorates the health, and lays the foundation necessary for the development of fever, cholera, and other cognate diseases ; and, inasmuch as it is less palpable in its effects than bad diet, excessive fatigue, intemperance, and other potent predisposing causes of disease, which are apt to affect an army in the field, and as it is more generally, nay, is invariably, present in a greater or less degree, it requires more constant and watchful attention. Remove the predisposing causes of an epidemic disease, and the exciting causes become, as a rule, inoperative ; diminish the former in degree, and the latter will be proportionately diminished in effect. For many years the experience of civil life has shown that the emanations from decomposing substances act

most powerfully in predisposing the system to the development of fever, dysentery, diarrhœa, cholera, &c. ; and the experience of the allied armies, during the war in the Crimea, has shown that, in the camp, the effluvia from putrescent matters were equally powerful agents in the development of diseases among the soldiers, and that the diseases thus developed were similar in character to those witnessed under the same circumstances in civil life.

To diminish the sources of atmospheric vitiation in a camp, it is requisite that proper receptacles should be provided for all ejected matters whatsoever ; that it should be imperative upon the soldier to use these receptacles ; that measures should be had recourse to for the destruction of such rejected matters as cannot be readily and deeply buried ; that a systematic watchfulness should be observed on the part of the officers ; and that special regulations should be adopted for the general guidance of the men. Nothing can be done effectually without a properly organized scheme of action, equally affecting the superior and inferior grades of officers, and the men. The sanitary state of a camp is a matter of too great importance to admit of the measures necessary to secure the conditions most favourable to the preservation of health being left to the option of one man or another.

Not unfrequently the site of an encampment was insufficiently prepared, the drainage in particular being defective ; and when the soil happened to be naturally moist, the air within the tents was ren-

dered damp, and this condition operated as a powerful localizing cause of zymotic disease.

Notwithstanding the want of any definite or special hygienic laws in the British army in the Crimea, the general good sense both of officers and men led to an avoidance of all the more glaring sources of filth, and to an adoption of measures of cleanliness which were characteristic. Even so early as the month of April, 1855, when the men had barely been relieved from the harassing and incessant duties which had devolved upon them during the winter, the nose at once pointed out the distinction between the French and Turkish and the English camps, the atmosphere in the two former camps abounding with pernicious effluvia; and, subsequently, the Sardinian camp might equally be distinguished from the British camp by a superfluity of foul odours. In none of the allied camps were the essentials of cleanliness attended to so much as in the British camp. The Sardinian soldiers equalled, if they did not exceed, the Turks in the filthiness of their habits; and the polluted condition of the outskirts of their encampments, and even of the immediate vicinity of their hospitals, was astounding. Moreover, there was a neglect in the removal or burial of carrion within the bounds of the French, Sardinian, and Turkish camps, which was never witnessed in the British camp.

Each of the allied armies suffered more or less from the neglect of hygienic measures.

In the spring, summer, and autumn of 1855, fever and scurvy prevailed extensively among the Turkish

troops at Eupatoria, in consequence of the foul hygienic condition of the town, and entrenched camp, and the imperfect rations of the soldiers. During the same period, the sick-rate of the Turkish force before Sebastopol was comparatively low, the camp being rarely fixed for more than six or eight weeks upon one spot, and the men being fully fed; but zymotic diseases, particularly fever, diarrhœa, and cholera, constituted the principal portion of the sickness which occurred, and attention to the most ordinary hygienic precautions would have diminished the amount of those diseases.

The sanitary state of the French camp and army during the winter of 1855-56 formed one of the saddest episodes of the war. "The earth within and without the dwelling-places of the men was saturated with the products of human and bestial bodies buried lightly '*par milliers*.' Throughout the winter, carcases were left to rot uncovered close to the tents, while soldiers in huts and tents closely shut against fresh air, constantly wet, the enclosed area sank, and loaded with all sorts of impurities. Personal cleanliness was impracticable in such habitations, and the *alentours* showed an utter disregard of all English notions of decency. To these local evils must be added the too close packing of huts and tents, both for the healthy and sick."* The tents, also, were old and much

* *England and France before Sebastopol looked at from a Medical Point of View.* By Charles Bryce, M.D. London, 1857. Page 84.

worn ; the food of the soldiers was, and had been for some months, scanty and unwholesome ; the supply of wood for fuel was deficient ; and the clothing was bad, and not fitted for winter.

Developed and fostered by these conditions, and by the neglect of even the commonest hygienic rules, sickness prevailed to so great an extent in the French army, that it was placed in a very critical position. At one time the aggregate number of sick amounted to 40,000. Typhus raged in the camp and hospitals with the virulence of a pestilence, and the mortality was enormous. M. Baudens declared that, of the typhus patients in hospital in February 1856, two-thirds were devoted to certain death. Forty-six surgeons died from typhus alone, and scarcely one escaped an attack of the disease. The medical staff became so crippled by its losses, that it was unable to meet the exigences of the period ; and on the Minister of War being urged to send out as many surgeons as possible, he declared that he had no more surgeons at his disposition, and that he could not procure any.—“ *Il n'en avait plus à sa disposition, et le recrutement ne répondait pas aux besoins.*” (Baudens.) The hospitals in the Crimea and on the Bosphorus were insufficient for the fitting accommodation of the immense amount of sickness which inundated them ; and while the French camp in the Crimea paralleled the horrible scenes which occurred in the British camp during the winter of 1854-55, the French hospitals on the Bosphorus paralleled the wretchedness, misery, neglect, and mor-

tality which reigned in our hospitals at Scutari during the same period.*

Inordinate fatigue had contributed greatly to the excess of sickness which prevailed among the British troops in the winter of 1854-55, but this important source of disease had little or no influence in the development of the maladies which ravaged the French army in the winter of 1855-56; for the duties of the French soldiers at that period did not exceed in severity those performed by the British soldiers, and the health of the latter was good. The position which was occupied by the French army was also almost inoperative in the causation of zymotic diseases; for the experience of the army, in the earlier part of the campaign, had shown that, with the exception of that portion of the position which was on the Tchernaya, the ground over which the camp extended was healthy; and the divisions of the French army which were encamped on the plateau of Sebastopol suffered equally from disease with the rest of the army, although the British divisions encamped on the same plateau had good health.

The causes of the extraordinary amount of sickness and excessive mortality which prevailed in the French army, are to be found alone in the foul sanitary condition of the camp, and the miserable state of the half-fed soldiers. The typhus epidemic was nursed and disseminated by the over-crowded and

* *Dr. Bryce, Op. cit. passim.*

filthy hospitals; every hospital was a centre of infection, and, in the camp, "typhus overflowed the hospitals, and was found in the regimental tents."—(Baudens.)

The Sardinian army did not escape the baneful consequences of a polluted camp, but the extensive hospital accommodation provided, and the completeness of the medical staff, sufficed to keep the outbreaks of zymotic disease which occurred more or less in subjection, or to nip them in the bud.

The care devoted to the removal of noxious agents in the British camp, had considerable influence in causing that high state of health and freedom from disease which prevailed among our troops towards the close of the war; but when the sanitary state of our army was at the best (May, 1856), and the sick-rate averaged only 5 per cent. of the whole force, 25 per cent. of the total admissions into hospital and 37 per cent. of the deaths were from zymotic disease. In May, 1855, zymotic affections constituted 64 per cent. of the cases of sickness admitted into hospital, and occasioned 90 per cent. of the deaths from disease; but, notwithstanding the great diminution in the amount both of the sickness and mortality from zymotic disease in May, 1856, the Sanitary Commission dispatched to the seat of war in the Crimea has expressed the opinion that, most probably, "a still further diminution of zymotic cases might have been obtained," had sanitary measures been more thoroughly

and systematically carried out in the camp, and the drinking of ardent spirits greatly diminished, if not prevented.*

V.—THE HOSPITAL.

My acquaintance with Turkish Military Hospitals was confined solely to the temporary hospitals in the Crimea. A description of the hospital at Balaklava will give a correct idea of the general character and management of the Turkish Field Hospitals during the Crimean war.

The hospital at Balaklava consisted of twenty-eight huts, which were situated in an almost central position within the lines on the heights East of the village. The position of the hospital was good, although not easy of access, for it was at an elevation of nearly six hundred feet above the lowlands, and it

* *Report of the Proceedings of the Sanitary Commission dispatched to the Seat of War in the East.* Blue Book, p. 196.

During the twelve months preceding the evacuation of the Crimea, the average proportion of zymotic disease to the total sick of the British army, exclusive of wounded, was rather more than 49 per cent., and the average proportion of deaths from zymotic disease to the total mortality from sickness was 51 per cent. From October 1, 1854, to April 30, 1855, fevers, cholera, and scurvy formed one-third, and diseases of the stomach and bowels one-half of the total admissions into hospital, exclusive of wounded. It may be roughly estimated that zymotic diseases constituted two-thirds of the cases of sickness admitted into hospital during that period.

was freely open to the winds, without being too much exposed; there was every facility for drainage and cleanliness, and numerous and copious springs of water were in the vicinity.

The huts were of British construction; they were built of $\frac{3}{4}$ ths of an inch planks, and the roofs had, with few exceptions, a water-proof felt covering. Twenty-four of the huts were of the same form and dimensions as those in use among the British troops, and they measured 28 feet in length, and 16 feet in breadth; the height of the side walls was 6 feet, and that of the summit of the roof was 12 feet. Within was a central pathway, 3 feet in width, which ran from end to end, and on each side was a wood flooring raised 6 inches from the ground, and $6\frac{1}{2}$ feet in width. Each of the huts had two windows, one being placed at each extremity. The windows were 3 feet square, they were elevated six feet above the floor, and the sashes were glazed and moved on a transverse axis. There was a single door to each hut, and it opened in the majority towards the south—the huts being arranged so that the longitudinal axis was almost directly north and south.

The huts were placed very close together, the intervening spaces not measuring more than six feet, and each hut was trenched round, but in a very imperfect manner; moreover, the trenches had no communication with each other, and no proper outlets.

The huts were erected early in 1855, and during

the hot season the wood warped and cracked considerably. The walls were neither painted nor white-washed within or without, and in the space beneath the flooring swarms of mice and rats found shelter.

There was no effective mode of ventilating the huts without discomfort to those within ; and in all such attentions as were necessary for the preservation of the integrity of the huts, the hospital authorities and the Turkish soldiers were wanting. The pervious condition of the walls during the summer and autumn of 1855 was perhaps occasioned less by the slightness of their construction than by the carelessness of the Turks. The means for any trifling repair, even to the extent of a few nails, were rarely at hand ; and the only method adopted to prevent the intrusion of wind and rain through the numerous crannies of the warped wood-work was by pasting paper over them.

The remaining huts were of small dimensions, and they were well constructed, and painted externally. These huts were appropriated to sick officers and the resident surgeons.

Each of the large huts accommodated fourteen patients, and to each hut were attached two orderlies, who lived and slept along with the sick of whom they had charge. No bedsteads were used, the patients being laid upon good flock beds of about four inches in thickness, which were placed (after the fashion of the East) upon the floor. The beds were covered with thick, white, and soft cotton, and each bed was provided with a sheet of the same material, and a heavy

white coverlid. Additional covering might be had if required, but it was rarely necessary, as each patient had his great coat along with him. The beds and bed-linen, and indeed the patient's dress generally, were almost invariably kept clean, and the principal portion of the materials being white, the aspect of the occupied huts was usually neat and satisfactory. The bedding and clothing of the patients were much less infested by insects than might have been anticipated from the construction of the huts and the peculiar habits of the men.

At the head of every bed was suspended a ticket, upon which was noted the name, age, father's name, province, regiment, battalion, and time of admission of the patient.

The hospital dress consisted of a long, blue, wide-sleeved, loose coat, of indifferent texture, in addition to the usual under-clothing of thick cotton.

Each hut was provided with two large and very useful basins for the general use of the occupants, a sufficient number of small basins for food, cups, plates, spoons (all of which utensils were made of metal), sponges, a charcoal-burner, and a tub, or a number of bottles for containing water.

Within the huts a considerable degree of cleanliness was maintained, but external to them cleanliness was little heeded. The vicinity of the hospital was most foully littered with filth, in consequence of the abominable habit which the Turkish soldiers have of avoiding latrines.

The latrine for the general use of the patients was placed about thirty feet from the huts. It was a capacious trench of about twenty feet in length, and a rough construction of planks had been erected above it. To the left of the latrine, at a distance of about thirty feet, was the cooking-house, and in its rear a hut for stores. In the space between these buildings and the latrine, it was customary for many months to kill the oxen and sheep required for the use of the hospital. The whole of the blood from the slain animals was allowed to run, and the refuse was thrown into a hole behind the store-hut. This hole was distant about fifty feet from the hospital huts, and it was full to overflowing of decomposing animal matter, from which arose a formidable stench.

Notwithstanding the contiguity of this sink of abomination and of the latrine, and that the ground was in a most filthy state, a short time previously to the removal of the Turkish forces from the neighbourhood of Balaklava to Mingrelia, several tents were pitched, for the accommodation of sick officers, in the open space between the cooking and store-huts and the latrines. Two detached latrines were also formed in the rear of these tents, and close to the walls of the store-hut.

The bed-pan used in the hospital was an iron vessel of very inconvenient form and size. This utensil was, however, too rarely had recourse to, and it was often painful to witness patients, seriously prostrated from disease, conducted to the latrine by an orderly.

The huts were heated when necessary by stoves, or by braziers, termed *mangals*, and fed with charcoal. The charcoal is ignited in the open air, where it is kept until it becomes incandescent, when it is in a state fit for use in an apartment.

The *mangal* is a very objectionable means of obtaining warmth, particularly in crowded quarters or tents; for the men, in order to secure the greatest degree of heat, invariably close every accessible aperture by which air can find admission, and under such circumstances, the fumes of burning charcoal, however carefully it may be managed, become an important additional source of atmospheric vitiation.

The food issued to the patients was generally good, and it was sufficient in quantity. The daily diet-scale of the hospital was as follows:—

Full Diet. Bread, 200 drachms ($22\frac{1}{2}$ oz.); rice, 92 drachms ($10\frac{1}{3}$ oz.); *yagh*, 8 drachms (nearly 1 oz.); meat, 100 drachms ($11\frac{1}{4}$ oz.); onions and other vegetables in variable quantities, and salt.

Half Diet. Bread, 100 drachms ($11\frac{1}{4}$ oz.); rice, 80 drachms ($9\frac{1}{2}$ oz.); *yagh*, 8 drachms (nearly 1 oz.); and meat, 50 drachms ($5\frac{1}{2}$ oz.)

Low Diet. Bread, $33\frac{1}{2}$ drachms (4 oz.); rice, 50 drachms ($5\frac{1}{2}$ oz.); and weak soup made from mutton or beef, as much as might be required.

Coffee, sugar, and tobacco were provided for the sick, if ordered by the surgeons in attendance; and the food was cooked in a manner similar to that in common use among the soldiers.

The dispensary appeared to be tolerably well furnished, but I am unacquainted with the character and quality of the drugs which were used. The surgical stores were of the most meagre description, and the instruments contained in them were insufficient for the satisfactory performance even of the minor operations.

There were two surgeons and two apothecaries resident at the hospital, and it was visited frequently by the principal surgeon of the forces.

The medical staff of the Turkish army is a very heterogeneous body. Attached to it are many Germans, Hungarians, Italians, Frenchmen, &c. who have studied, or profess to have studied, in the medical schools of their respective countries. Some of these men have been driven into the Turkish service by necessity, and among them are to be found several whose talents are of no mean order, but their merits are crushed beneath the mass of ignorance with which they have to contend, and the discomforts of the degrading position in which they are generally placed; others are simply adventurers whose knowledge of medicine and qualifications to practise it are very dubious.

The Turkish medical men have been, with few exceptions, educated at Constantinople or at Alexandria. Some have a highly creditable acquaintance with their profession in its different branches, but others, and by far the greater number, are very ignorant.

The surgery which I saw practised at the Balaklava Hospital was exceedingly barbarous, and the medical

practice was of a somewhat haphazard description. Preparations involving a multitude of constituents, such as were delighted in by physicians a century and a half ago, were much used ; and *mithridate*, a preparation of wonderful complexity, which was considered by our forefathers to have great virtue as an antidote to poison and to pestilence, was a favourite remedy for cholera, with at least one of the hospital surgeons, a man of mature age and standing.

But it is not to be forgotten that great difficulties are experienced in teaching and acquiring scientific medicine in Turkey, from the general want among the students of that preliminary education which is essential to prepare the mind to comprehend correctly the truths of any science ; from the, as yet, unmanageable character of the Turkish language as a means of conveying instruction in medicine, in consequence of the want of a scientific terminology ; and from the obstacles which hinder an efficient tuition in the French language. With these impediments, the talented professors who occupy, and have occupied for some time, the different chairs at the Turkish schools of medicine, have to contend, and it is no wonder that their leaven has not yet pervaded the whole of the native members of the Army Medical Staff.

Notwithstanding the ignorance which too commonly prevails among the Turkish surgeons, there is, nevertheless, in the Turkish army, a sufficient amount of medical skill to effect considerable good among the soldiers, if it were properly fostered and supported.

The medical staff seems, however, to have literally no influence in controlling those matters which most concern it. It is slighted by the Porte, and its requirements are unattended to by commanding officers. Indeed, it is probable that the short-comings of the Army Medical Staff are due as much to neglect of this kind as to the medical men themselves.

Over all that relates to the provision of food, clothing, and shelter for the sick, the medical man has little or no control; yet these things have peculiar reference to his duties, particularly during harassing campaigns, when the soldiers are most commonly broken down by diseases which arise from fatigue and want, and when the treatment required for the sick is the administration not so much of medicine as of a diet which the ordinary stores of a hospital do not usually admit of. Under such circumstances, the requisitions of the Turkish medical staff are commonly unattended to.

The special requirements of the medical man are, moreover, thwarted by the character of the stores placed at his disposal. Large quantities of worthless and useless drugs and preparations, the names and uses of some of which are occasionally not known, are sent to the different dépôts yearly. The surgical appurtenances, also, are exceedingly scanty and imperfect, and occasionally they are wanting almost altogether. Much, therefore, as the ignorance of the medical men has to do with the degraded and inefficient condition of the healing art in the Turkish army, it is not the sole cause of that degradation and inefficiency.

The ignorance of commanding officers, and that system of official dishonesty of which the bad condition of the medical stores is an illustration, contribute equally to these results. Any efforts for the reform of the medical staff and administration of the Turkish army, unaccompanied by reforms in the government executive, will doubtless fail.

The hospital at Balaklava was under the supreme control of a military officer, a Bey, who had the power of providing whatever might be required in addition to the ordinary supplies of the hospital.

The conveyance of the sick and wounded of the Turkish army during the Crimean war was effected principally by means of Tartar waggons, buffalo waggons, and pack-animals. The Tartar waggons (few in number) were, I believe, part of the spoil of Eupatoria. They were light, four-wheeled vehicles, with covers, and they answered well for sick conveyances. The buffalo waggons were vehicles of the rudest construction. They had four wheels, but the wheels rarely approximated to a circle, and each wheel generally differed from its fellow in diameter. The bottom was formed of three or four pieces of rough undressed timber, and the sides had a rude railing inclining outwards.

On the evening when the Mamelon Vert was assaulted and captured (June 9th, 1855), a division of Turks having been moved into the trenches on the right of Careening Bay ravine, an order was sent to the officer in charge of the hospital at Balaklava, di-

recting him to send all the patients fit for removal to Eupatoria, so that every preparation could be made for the reception of any wounded men who might be sent from the front. A little before sunset, about twenty-five buffalo waggons, of the character just described, slowly ascended the road to the hospital. At the same time a movement was observed amongst the huts, and very soon about two hundred and fifty patients were, with their packs, placed on the ground in front of the huts. Many of these poor fellows were quite incapable of sitting up, unless supported. When the patients to be removed had all been got together, the process of placing them in the waggons commenced; but before the whole of the vehicles were freighted, night had fallen. It was near ten o'clock when a chorus of the dismallest creaks that ungreased axles could emit, announced that the waggons had started with their loads of suffering. For several hours had the invalids, most of whom were affected with diarrhœa or fever, been kept in the open air upon the ground; then came the rough and slow journey in the waggons; and after that would be the embarkation.

The most common mode of conveying the sick was by pack-animals, the patient being placed astride of an ordinary pack-saddle. I have frequently seen invalids fall off the animals exhausted, and lie by the road-side for some time before they were again able to mount. I have witnessed instances of this kind occur within a short distance of the hospital, yet no assistance has been given; the sick man lying upon the

ground, the leader of the pack-animal sitting by him, until he was able again to proceed.

About twenty mules, with seats for the sick and wounded, after the French fashion, were attached to the Turkish force before Sebastopol during a part of the war, and they did good service.

I had no means of ascertaining the average sick-rate of the Turkish army in peace, or during the Crimean war.

In the winter of 1854-55, the Turkish force at Balaklava underwent great privations, and suffered from excessive sickness.

In the spring, summer, and autumn of 1855, much sickness prevailed among the troops at Eupatoria. The hygienic condition of the town and of the entrenched camp, particularly of the former, was bad. The streets were little better than foul drains in wet weather; the court-yards were generally littered with filth, and the portions of the town which were occupied by troops, and the camp, were much crowded. The rations were deficient, fresh meat and vegetables, and the full allowance of fresh bread, being rarely issued; and the water chiefly used was brackish. Scurvy of a serious character broke out and affected many of the men, and continued fever became rife.

The Turkish force, which was encamped before Sebastopol, during the same period was plentifully rationed, and it had usually comparatively good health. In the summer, diarrhœa and cholera broke out in this force, but the diseases did not prevail to any great extent.

It is difficult to account for the good supply of food to the Turkish force before Sebastopol, while the troops at Eupatoria were so wretchedly rationed ; unless it be surmised that, in the former instance, the Turkish military authorities were aided by the British Commissariat.

An interesting illustration of the physical capacity of the Turkish soldier is afforded by the state of health of the Turkish contingent while stationed at Kertch. The strength of the force, which was officered by British officers, and fed by a British commissariat (the ordinary rations being similar in quantity and quality to those issued to the Turkish army), was from 17,000 to 18,000 men, of whom 1600 were not Turks. The Turkish soldiers were laboriously employed in constructing extensive lines of entrenchments, road-making, hut-building, &c. besides their ordinary field-duties ; and many of the men had passed through the campaign on the Danube in 1854-55, and were affected with various chronic ailments, or were slightly tainted with scurvy. During the quarter ending December 31st, 1855, the entire sick-rate of the force was somewhat under 2 per cent. ; in January, it increased to 2.1 per cent. ; and in February, scurvy having broken out, the sick-rate was nearly 5 per cent. During the corresponding periods, the sick-rate of the British army before Sebastopol was, respectively, 7.2, 8.6, and 6.4 per cent. ; and the sick-rate of the army when in its most healthy state (May 1856) was 5 per cent.

Dr. Milroy, who was one of the Sanitary Commissioners dispatched to the Crimea, and from whose report on the sanitary condition of the troops at Kertch I have derived the particulars relative to the health of the Turkish contingent, writes, "No spirituous liquors were issued to the Turkish soldiers, and it was the universal opinion of the officers of the contingent, both commanding and medical, that the temperate habits of the Turks in their general diet had much to do with the low sickness-rate of the force. * * * The very favourable condition of health of the Turkish contingent, notwithstanding some obvious sanitary defects in their camps, speaks volumes as to the preservative influence of temperance, and the disuse of intoxicating liquors, and the lesson should not be forgotten."*

There can be little doubt that the large daily ration (*one gill*) of spirit issued to the British soldiers during the principal portion of the Crimean war, was, as a rule, most hurtful, and, indeed, unnecessary. It fostered the excessive intemperance which was prevalent in the army, and, in itself alone, was doubtless a powerful predisposing cause of disease.

The Sanitary Commission has reported that, "During the winter and spring (of 1855-56) there were at least thirty or forty deaths occasioned immediately and directly by intoxication, the men having never recovered from the first shock of the alcoholic poison. Many

* *Report of the Sanitary Commission dispatched to the Seat of War in the East*, pp. 173—176.

other deaths followed in a few days on specific acts of drunkenness from rapidly-fatal diseases occasioned by them; and much sickness, not ending in death, must be referred to the same evil. Bad and unwholesome liquors had something to do with the result, but excess had more. There can be no doubt that the use of alcoholic stimulants exercised a very sensible effect on the amount of disease and mortality in the army.”*

Dr. Milroy states that, “in consequence of the increased amount of intemperance after the cessation of the siege, from the greater facilities of purchasing spirituous liquors in the camp, the attention of the Commander-in-chief was formally drawn to the subject. A board of officers was convened, and, upon their recommendation, the daily allowance of rum was reduced to one-half, while that of sugar was correspondingly increased.”†

The influence of the daily issue of spirits upon our soldiers is a question of great moment. It is probable that this issue is the prime source of that intemperance which is so disgraceful and injurious to our army. Among recruits the ration of spirit generally induces either the habit of drinking,‡ or it confirms the habit,

* *Report of the Sanitary Commission*, p. 192.

† *Report of the Sanitary Commission*, p. 231.

‡ “Young recruits, just arrived (in the Crimea), would now and then refuse their ration (of spirit) for a time, but they soon overcame their aversion, and took it as readily as others. The habit is too easily acquired. Even the Turks, and other natives in the Land Transport Corps, sometimes drank their allowance, for it was served out to them also. Generally, however, they sold it to the British part of the force, to the no small injury of the latter.”—*Dr. Milroy; Report of the Sanitary Commission*, p. 231.

if it has already been formed. The propriety of cutting off the daily issue of spirit, and of providing an equivalent for it in food or pay; or of offering an additional inducement to the soldier to avoid intemperance by giving him, in lieu of the ration of spirit, a larger or more varied ration of food, or an increase of pay, can scarcely be questioned. The plea for the necessity of the ration of spirit, in consequence of the acquired habit of drinking which is prevalent among the soldiers, is not sound either in policy or principle.

During periods of excessive duty and exposure, particularly when the supply of food is insufficient in quantity and bad in quality, and when it is impracticable to obtain, or to prepare other and less objectionable stimulants, as coffee or tea, a ration of spirit may prove of considerable value to the soldier, as was shown during the winter of 1854-55 in the Crimea. But this does not afford a good or sufficient reason for an indiscriminate issue of spirit, or against the most trenchant measures for putting a stop to intemperance, as the necessity for an issue of spirit could be met in the same fashion as the necessity for an issue of lime-juice when scurvy becomes apparent in the army. The Medical Staff would determine when a ration of spirit was required, and the issue could be conducted in the same form as the issue of lime-juice.

The canteens and general stores which abounded in the camp before Sebastopol were the great *feeders* of the intemperance of the soldiers; but, as the military authorities have absolute control over canteens

and stores, they must be held responsible for the evils arising from them. The measures regulating the number and character of canteens and general stores in a camp cannot be too stringent.

The value of the ration of coffee issued to our soldiers during the war was great. Coffee, under almost all circumstances of fatigue from harassing duty, is as valuable and efficient a stimulus as spirit; and it causes none of the injurious effects which are apt to arise from the use of the latter; but coffee will never be drunk freely, unless a taste for it is cultivated. The encouragement of a partiality for other drinks than spirituous liquors among the soldiers should be a prominent object in their training; and perhaps there could be no better initiatory plan of doing this than that of issuing to each man a liberal daily ration of coffee, and the establishment of *cafés* in place of canteens.

No measures for the check of intemperance in the army will, however, prove thoroughly effective, unless they are combined with systematic efforts for the moral and mental culture of the soldiers.

FINIS.

